

## ABSTRACT

The invention concerns a method Method for the reconstruction of holographic images, the holographic image being detected by an image detection device (9), the holographic image being transformed in a digitized hologram (10), the digitized hologram (10) being comprised of a number  $V_r$  of elementary pixels, the size of which being equal to the holographic image sampling intervals, and of the  $V_r$  values (51) respectively associated to the elementary pixels, the method comprising a first step (11,12) of processing the digitized hologram array, and a second step (13,15,16,17,18) of hologram reconstruction in the observation plane starting from the digitized hologram processed in the first step, the method being characterised in that the second step is carried out through discrete Fresnel Transform applied on an array of  $V_e$  values corresponding to pixels having size equal to that of said elementary pixels, wherein said array of  $V_e$  values (50, 51) includes said array of  $V_r$  values and an integer number  $p = V_e - V_r > 0$  of constant values (50) equal to  $OS$ , said number  $V_e$  of values being inversely proportional to the desired pixel size to be obtained for the reconstructed image (14).

The invention further concerns the instruments necessary to the execution of the method and the apparatus executing it.